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**VENABLE**  
 ATTORNEYS AT LAW

September 8, 2000

Assistant Commissioner for Patents  
 Washington, D.C. 20231

**ATTN: BOX PATENT APPLICATION****Attorney Docket: 31653-165337 RK****Re: Inventor(s): Uwe HEITMANN****Title: TOBACCO-PROCESSING PRODUCTION MACHINES**

Sir:

Please find attached hereto patent application. It is hereby requested that this application be accorded a filing date pursuant to 37 C.F.R. 1.53(b)(1). Enclosed are:

- ☒ Twenty-Three (23) pages Specification, Claims, Abstract
- ☒ Ten (10) sheets of Formal Drawings
- ☒ Preliminary Amendment
- ☒ Declaration/Power of Attorney
- ☒ Assignment, certified cover sheet and recordation fee.
- ☒ Priority is claimed under 35 USC 119 from German Patent Application No.19943320.8 filed September 8, 1999, certified copy enclosed.
- ☒ Information Disclosure Statement, PTO form 1449 with references cited.

**Fees:** (see formula below) Check Enclosed

Basic Fee: ..... \$690.00  
 2 Additional Dependent Claims..... 36.00  
 Recordation Fee:..... 40.00

**TOTAL FEES ENCLOSED FOR ABOVE APPLICATION.... \$766.00**

In the event there is attached hereto no check, or a check for an insufficient amount, please charge the fee to our Account No. 22-0261 and notify us accordingly.

**Please forward all correspondence to the following address:**

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00657843-27825960



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re PATENT APPLICATION of

Applicant	:	Uwe HEITMANN	)	
			)	
U.S. Appln. No.	:	Not Yet Assigned	)	
			)	
Filed	:	Concurrently	)	
			)	
For	:	TOBACCO-PROCESSING	)	PRELIMINARY
		PRODUCTION MACHINES	)	AMENDMENT
			)	
			)	
Attorney Docket	:	<u>31653-165337 RK</u>	)	<u>September 8, 2000</u>

Assistant Commissioner for Patents  
Washington, D.C. 20231

**Attention: PCT DO/EO/US**

Sir:

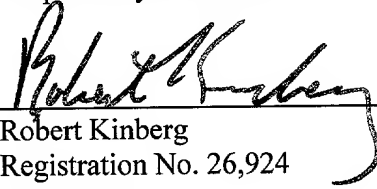
Prior to examination, please amend the above-identified application as follows:

Page 2, line 4, change "2000" to --1999 --.

**REMARKS**

The specification has been amended to correct the Priority filing date.

Respectfully submitted,

  
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RK/cas  
DC2DOCS #239327

005000-2625960

APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTOR: Uwe HEITMANN

TITLE: ARRANGEMENT FOR REDUCING THE NOISE LEVEL OF  
TOBACCO-PROCESSING PRODUCTION MACHINES

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DOCKET: 31653-165337 RK

00557949-09000

## CROSS-REFERENCE TO RELATED APPLICATIONS

Priority is claimed with respect to Application No.199  
43 320.8 filed in the German Patent Office on September 10,  
2000, the disclosure of which is incorporated herein by  
5 reference.

## BACKGROUND OF THE INVENTION

The invention relates to an arrangement for reducing  
the noise level of tobacco-processing production machines,  
10 particularly in an operator region of a production line  
comprising at least two production machines disposed at an  
angle to one another.

Production machines of the tobacco-processing  
industry primarily encompass cigarette-production machines  
15 and filter-attachment machines, which are preferably joined  
diagonally at a 90° angle to form a production line. The  
machines may further include packaging machines and other  
standard tobacco-industry components, such as filter-  
production machines and article-transport devices, the  
20 latter representing a secondary source of noise.

Particularly in the aforementioned production line, an  
operator, who is preferably positioned in the corner zone  
between two machines, is exposed to a great deal of machine

noise. Previous efforts to reduce the noise have been unsuccessful in preventing operating noises created by mechanical components, and flow noises produced by process air, especially suction noises, from being emitted from the machines and entering the operator region, because it is not possible to hermetically seal the machine.

#### SUMMARY OF THE INVENTION

It is an object of the invention to implement further, more effective anti-noise measures.

In accordance with the invention, this object is accomplished in that the reflection surfaces facing the operator region are provided with sound-damping material.

According to a modification, a particularly effective noise absorption is attained when the sound-damping structure of the damping material faces the operator region. This is realized particularly simply if the reflection surfaces formed by the cladding of the production machines are equipped with damping mats.

An embodiment that is especially easy to handle, exchange and adapt involves a configuration of damping mats as exchangeable damping elements having a neutral shape.

The damping elements are advantageously embodied as truncated cones that are connected to the machine cladding by a central screw connection.

In an advantageous embodiment, in which the absorption  
5 properties are guaranteed, and, at the same time, an attractive appearance is assured, the absorption surfaces of the truncated cones are covered with cladding sheets having openings in the manner of a sieve.

In a preferred embodiment of the absorption surfaces  
10 as parts of a removable carriage, the damping mats are inserted between inside reflection plates and outside, sieve-like cladding surfaces, with the reflection plates and cladding sheets additionally being inserted into corner-profile strips whose hollow space is filled with  
15 damping material. This achieves a machine cladding that has a smooth surface and effective absorption properties.

In the sense of a unified, sound-absorbing machine cladding, it is also provided that, in an absorption  
surface embodied as a door, inside and outside cladding  
20 sheets are inserted, with an interposed reflection surface and hollow spaces filled with damping mats, into a profile frame embodied as a hollow body and closed by corner connectors, the frame being provided with a pivoting axis

and recessed sealing elements. To increase the stability of such an arrangement, it is also proposed that the cladding sheets and the reflection surface be stabilized by means of spacing sleeves that are screwed together.

5           The versatility of the construction principle exhibited by the cited arrangements is expanded in a modification in which two viewing panes are inserted into a profile strip in an absorption surface embodied as a window flap, with the strip and an inserted cladding sheet  
10 limiting a hollow space filled with damping mats.

For the anti-noise measures to include a relatively large base surface that reflects the machine noises, it is further proposed for at least one standing region for the operating personnel, which borders the production line of  
15 the machines, be provided with a damping layer. This type of arrangement can be embodied to be particularly effective and easy to handle if, in accordance with a modification, the damping layer comprises damping tiles laid under the entire surface of the production machines.

20           This type of arrangement becomes especially stable and effective in terms of damping if the damping tiles are embodied as tile boxes filled with damping material and disposed in the manner of a grid between supports. The

boxes are easily accessible, without losing their  
absorption properties, because they are provided with a  
gridiron support that forms a standing surface.

With the arrangement under the entire surface of the  
5 machines, a high contact stability must be present beneath  
the machine feet, which is achieved by the insertion of  
damping tiles having stress-specific layers into the  
gridiron support.

To facilitate the sweeping of these gridiron supports,  
10 and to prevent tobacco fibers from entering the damping  
material through the grid openings, a preferred  
modification provides that a tile box forming a floor tile  
has a gridiron that includes elevations, as well as lateral  
and base-side buffers, which avoids a direct contact  
15 between adjacent tile boxes, and between tile boxes and the  
floor, that would effect a solid-borne sound transmission.

The penetration of tobacco fibers or other undesired  
elements, or moisture, into the damping materials is  
prevented by a preferred embodiment, in which the gridiron  
20 support of a tile box has rounded edges and is positioned  
on a sound-permeable film, which covers a fine-mesh sieve  
lying on the damping mat.



To complete the anti-noise measures, it is further provided that the air-flow cross sections required for the process air supply of the production machines are predominantly concentrated in flow conduits clad with  
5 sound-damping material.

In connection with the damping mats covering the floor, a further proposal allows flow-related noise sources to be controlled by the concentration of sound-damped flow conduits in the floor region of the production machines.

10 The flow noises are additionally reduced by the embodiment of air-passage gaps of the machine cladding as sound-absorbing damping gaps.

The advantage attained with the invention is that, regardless of specific, particularly sound-intensive, noise  
15 sources inside the machines and the more or less successful isolation of the noises from the outer operator region of the machines, the entire sound spectrum is generally reduced, because the operating noises emitted by the machines, which have different frequencies, are absorbed  
20 outside of the machine interiors, and are therefore considerably reduced with respect to the operating personnel.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described in detail below in conjunction with embodiments illustrated in the drawing.

Shown are in:

5        Figure 1 is a sectional representation through the distributor of a cigarette-strand machine;

Figure 2 is a sectional representation through a filter-attachment machine;

10       Figure 3 is a plan view of an angular production line formed by a cigarette machine and a filter-attachment machine;

Figure 4 a floor plan for sound-damping material for setting up the production line according to Figure 3;

15       Figure 5 a cross section through a tile element of the sound-damping material according to Figure 4;

Figure 6 a plan view of the tile element according to Figure 5;

Figure 7 a cross section through a sound-damping element of the machine cladding;

20       Figure 8 a plan view of the sound-damping element according to Figure 7;

Figure 9 an alternative damping cladding on a machine wall embodied as a removable carriage according to Figures 1 and 2;

Figure 10 a cross section through a corner profile strip of the carriage according to Figure 9;

Figure 11 a cross section through an alternative damping profile on a machine cladding embodied as a door;

Figure 12 a front view of the door according to Figure 11;

Figure 13 a cross section through a detail of the door damping profile;

Figure 14 a cross section through a damping profile of a machine cladding embodied as a see-through flap;

Figure 15 a cross section through an alternative damping tile for covering the floor;

Figure 16 a plan view of the damping tile according to Figure 15; and

Figure 17 a partial cross section through a further embodiment of the damping tile.

20

#### DETAILED DESCRIPTION OF THE INVENTION



generated by a further nozzle arrangement 19, then join the other tobacco fibers on the guide surface 16 to form a tobacco stream that extends over the width of the distributor 1 (perpendicular to the drawing plane), which  
5 is supported and accelerated by additional compressed air exiting a further nozzle arrangement 21 at the guide surface 16.

In this way, the tobacco stream is transferred upward to a suction strand conveyor 25 that is moved perpendicular  
10 to the drawing plane, and at which a tobacco strand is formed with the use of flowing suction air; this strand is encased and processed into individual cigarettes as it continues through the cigarette-strand machine 2.

The high air throughput effected by the numerous  
15 pneumatic conveyor elements creates an increased noise level in addition to the mechanical drive noises of the machine. This noise reaches the outside by way of unavoidable machine cladding gaps.

In accordance with the invention, the outside machine  
20 walls, flaps, doors, hoods or carriages facing the operating space or the floor region, and acting as reflection surfaces 20, are provided to the greatest possible extent with noise-damping material in the form of



mounted to the front and rear machine cladding, and on the machine floor, in the form of a sound damper 28 for a central air-intake opening 27.

In addition, a damping mat 22 is laid on the floor, at least from the standing region in front of the machine to beneath the machine floor.

In the cigarette-strand machine 2 and filter-attachment machine 30 having a switch cabinet 32, and with the machines being set up at a closed right angle to form a production line 35 according to Figure 3, the damping mat 22 is designed to cover the entire base surface of the production line 35 corresponding to Figure 4. As the floor mat, the damping mat 22 comprises individual damping tiles 33, which, according to Figure 5, are embodied as tile boxes 34 having supports 36 that are disposed in the manner of a grid, and are equipped with damping material in the form of damping mats 22 inserted with a precise fit. The tile boxes 34 as the standing surface are provided with a gridiron support 37 that is screwed to the supports 36.

Corresponding to the setup plan of the production line 35, stress-specific supports are inserted into the gridiron supports 37 according to Figure 4, for example, at the locations with greater particle accumulation, in the form

of easy-to-clean, closed plates 38, or under the machine bases in the form of reinforced support plates 39.

As a further anti-noise measure, according to Figure 2, the remaining gaps 41 at the machines 2 and 30 are embodied to have the greatest possible sound-damping effect.

The air sucked in through a fan 42 is conveyed through sound-damped flow conduits 43, 44, 46 inside the machine, and carried off via an air exit 47 at the top of the machine, which further reinforces the sound damping.

In alternative embodiments of the damping elements illustrated in Figures 9 through 16, parts that correspond to those in the above-described arrangements are provided with reference numerals that are increased by one hundred.

In the carriages 148 illustrated on the outside of the machine in Figures 9 and 10, damping mats 122 are inserted laterally and underneath between inside reflection surfaces 120 and outside, sound-permeable cladding sheets 126, and into corner-profile strips 149, with the plate-shaped reflection surfaces 120 and cladding sheets 126 being inserted into the correspondingly-spaced receiving grooves of corner-profile strips 149.



In the machine cladding embodied as a door 151 in Figures 11 through 13, inside and outside sound-permeable cladding sheets 126 with interposed reflection surfaces 120 are inserted into receiving grooves of four profile strips 154 joined by corner connectors 152 to form a profile frame 153. The hollow spaces formed in the process are filled with damping mats 122.

Sealing elements 157 are inserted into the profile frame 153, which can pivot about an axis 156. The cladding sheets 126 and the reflection surface 120 are stabilized against shifting by spacing sleeves 158 that are screwed together.

In the window flap 159 illustrated in Figure 14, two viewing panes 162 and 163, and a cladding sheet 126, are inserted as a double glazing into a profile strip 161 of a window frame. The cladding sheet limits a hollow space that is filled with damping mats 122.

In the alternative tile box 134 of a damping tile 133 covering the floor, as shown in Figures 15 and 16, the gridiron support 137 is provided with elevations 164 in a specific lattice or grid arrangement of the supports 136; these elevations prevent tobacco fibers that are lying on

the gridiron support 137 from entering the damping mats 122, and allows them to be swept away more easily.

Furthermore, buffers 166, which prevent a solid-borne sound transmission between the damping tiles, and into the floor, are inserted, on the side and bottom, between the damping tiles 133.

As the last embodiment, in a floor-damping tile 233, a gridiron support 237 is provided with rounded edges 267 and a sound-permeable film 269, which is inserted between a narrow-mesh sieve 268 that lies on the damping mat 222 and the gridiron support 237, the film preventing the passage of fine particles into the damping material.

The invention has been described in detail with respect to preferred embodiments, and it will now be apparent from the foregoing to those skilled in the art, that changes and modifications may be made without departing from the invention in its broader aspects, and the invention, therefore, as defined in the appended claims, is intended to cover all such changes and modifications that fall within the true spirit of the invention.

WHAT IS CLAIMED IS:

1. An arrangement for reducing noise level in a tobacco-processing production machine, comprising in combination:

a tobacco-processing production machine having an operator region and reflection surfaces facing the operator region; and

sound-damping material disposed on the reflection surfaces facing the operator region.

2. The arrangement according to claim 1, wherein the production machine comprises at least two production machines disposed at an angle to one another and forming a production line.

3. The arrangement according to claim 1, wherein damping material includes sound-damping structure facing the operator region.

4. The arrangement according to claim 1, wherein the production machine includes cladding that forms the

reflection surfaces and the sound damping material comprises damping mats disposed on the cladding.

5. The arrangement according to claim 4, wherein the damping mats comprise exchangeable damping elements having a neutral shape.

6. The arrangement according to claim 5, wherein the damping elements comprise truncated cones connected to the machine cladding by a central screw connection.

7. The arrangement according to claim 5, wherein the truncated cones have absorption surfaces and the damping elements include cladding sheets having openings in the manner of a sieve covering the truncated cones.

8. The arrangement according to claim 1, wherein the production machine includes a removable carriage having inside plates and outside sieve-like cladding sheets, and the sound damping material comprises damping mats disposed between the inside reflection plates and the outside, sieve-like cladding sheets.

9. The arrangement according to claim 8, wherein the removable carriage includes a corner profile strip having a hollow space filled with the damping material, and the reflection plates and cladding sheets are insertable into the corner-profile strips.

10. The arrangement according to claim 1, wherein the production machine includes a door having inside and outside cladding sheets with reflection surface interposed between the inside and outside cladding sheets defining hollow spaces between the reflection surface and a respective one of the inside and outside cladding sheets, and wherein the damping material comprises damping mats filling the hollow spaces, and the door further includes a profile frame comprising a hollow body having a pivoting axis and recessed sealing elements and the cladding sheets are inserted into the profile frame.

11. The arrangement according to claim 10, further including spacing sleeves screwed together and stabilizing the cladding sheets and the reflection surface.

12. The arrangement according to claim 1, wherein the production machine includes a window flap comprising two viewing panes, a profile strip into which the viewing panes are inserted, and a cladding sheet inserted into the profile strip and limiting a hollow space filled with damping mats.

13. The arrangement according to claim 2, wherein the production line is limited by at least one personnel standing region that is provided with a damping layer .

14. The arrangement according to claim 13, wherein the damping layer comprises exchangeable damping tiles that cover an entire surface beneath the production machines.

15. The arrangement according to claim 14, wherein the damping tiles comprise grid-type supports having tile boxes filled with damping material.

16. The arrangement according to claim 15, wherein the tile boxes include a gridiron support forming a standing surface.

17. The arrangement according to claim 16, wherein the damping tiles have stress-specific covers inserted into the gridiron support.

18. The arrangement according to claim 15, wherein the tile box includes a gridiron support including elevations, and lateral and floor-side buffers.

19. The arrangement according to claim 17, wherein the gridiron support of a tile box has rounded edges, the tile box includes a fine-mesh sieve positioned on the damping mat, a sound-permeable film that covers the fine-mesh sieve, and the gridiron support rests on the sound-permeable film.

20. The arrangement according to claim 1, wherein the production machine has air-flow cross sections for supplying process and the air-flow cross sections are predominantly concentrated in flow conduits clad with sound-damping material.

21. The arrangement according to claim 20, wherein the sound-damped flow conduits are concentrated in a floor region of the production machine.

22. The arrangement according to claim 20, wherein the production machine has cladding with air-passage gaps which are configured as sound-absorbing damping gaps.



ABSTRACT OF THE DISCLOSURE

In an arrangement for reducing noise level in a tobacco-processing production machine having an operator region and reflection surfaces facing the operator region, sound-damping material is disposed on the reflection surfaces facing the operator region.

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Fig. 1

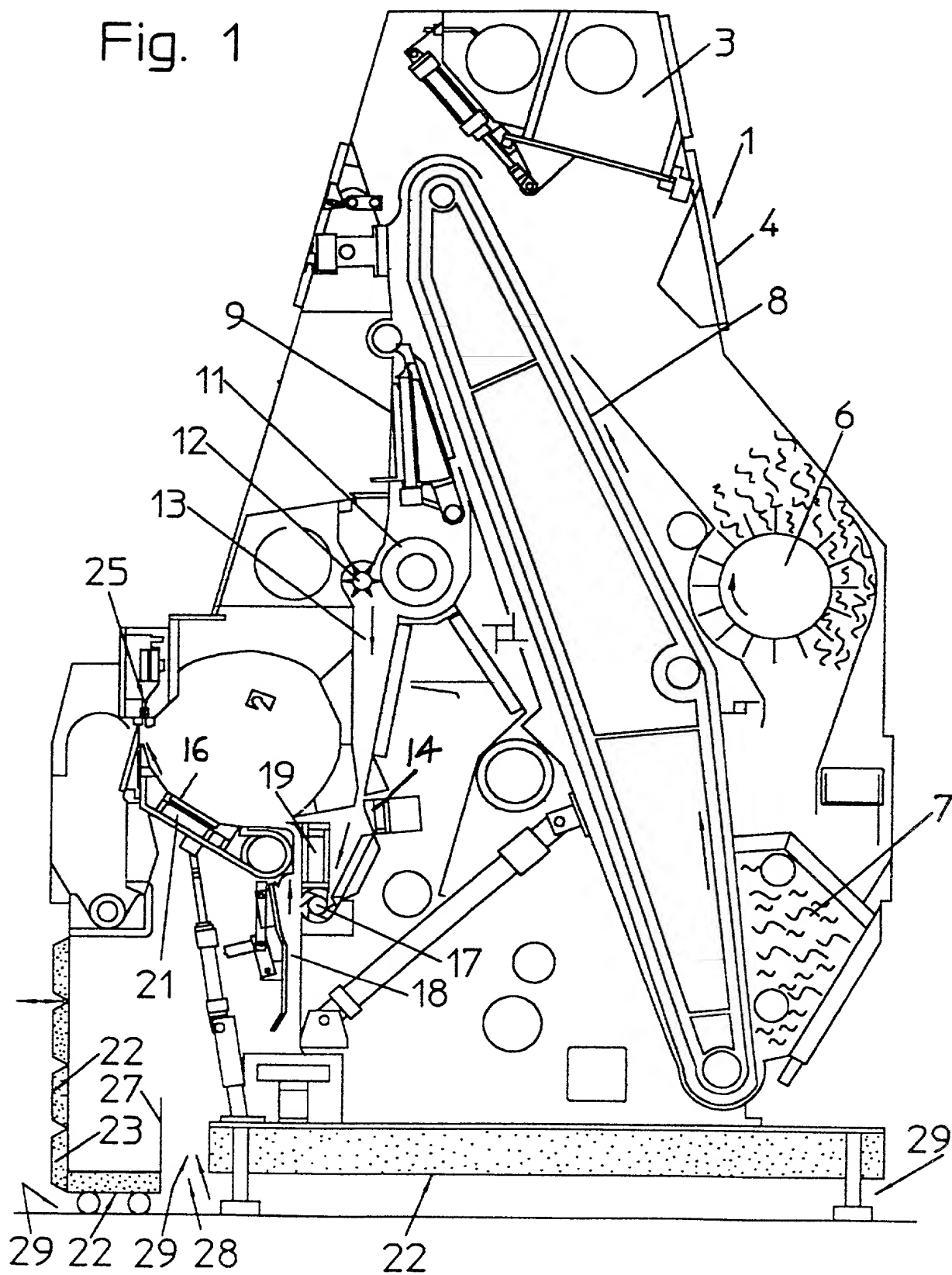


Fig. 2

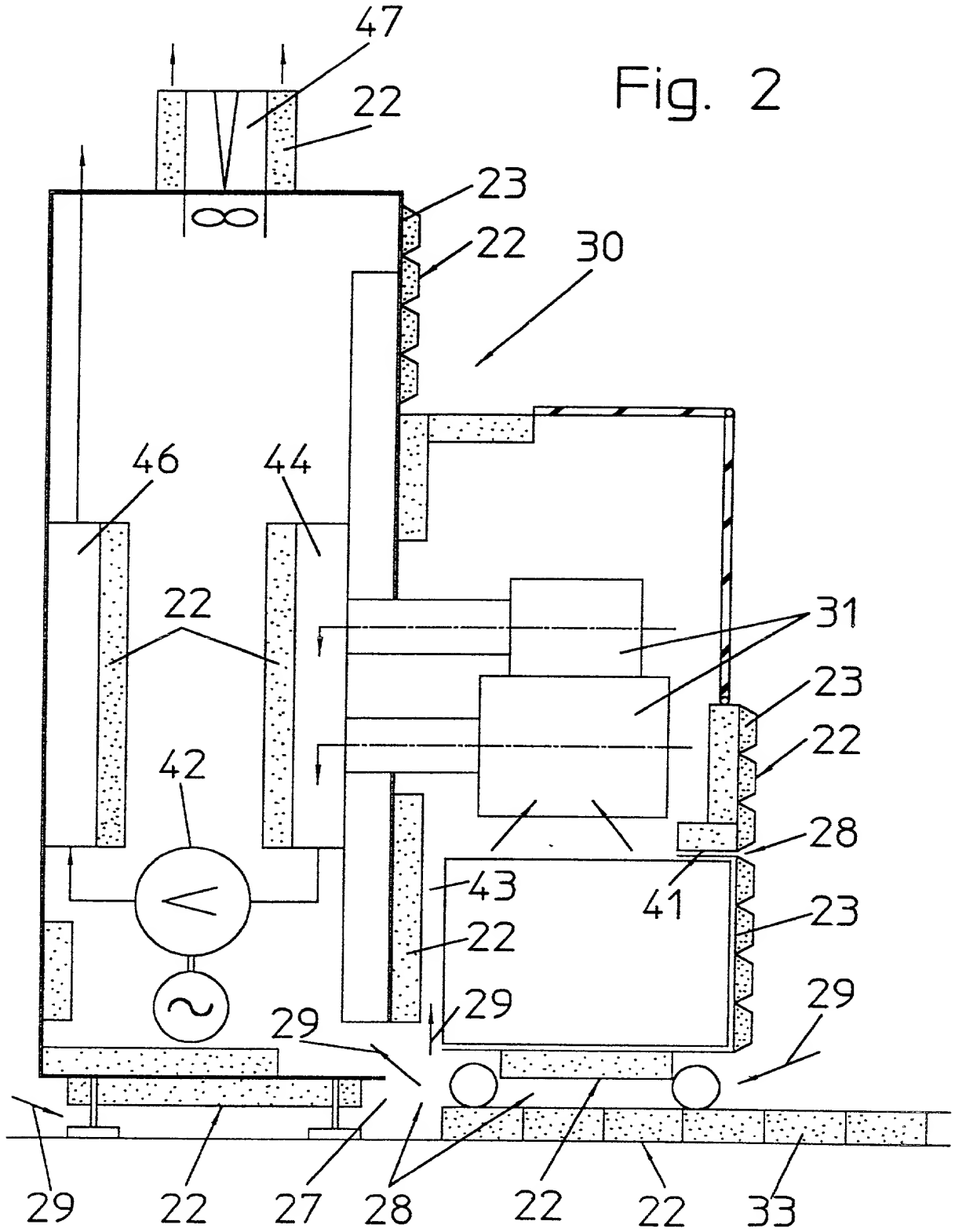


Fig. 3

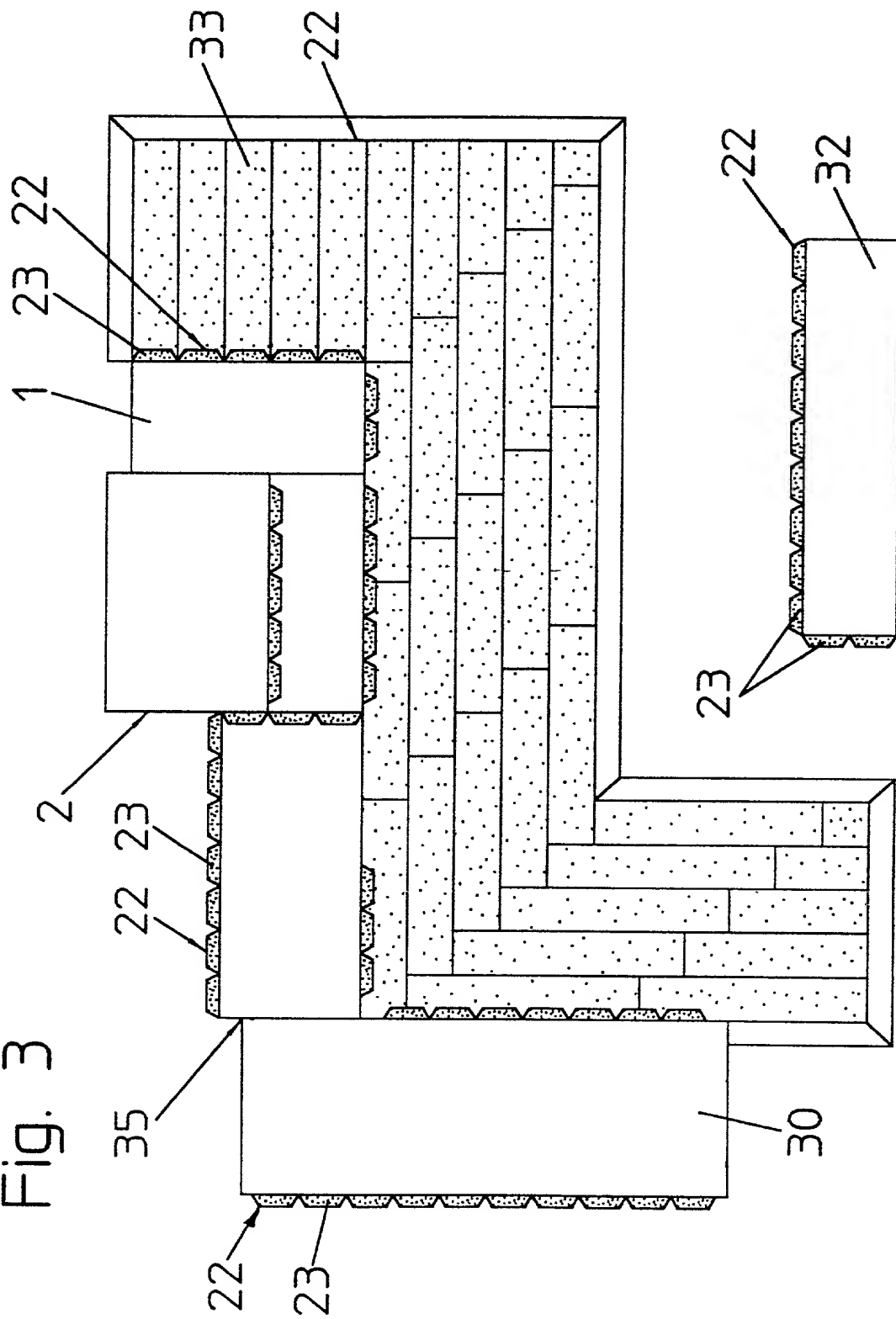
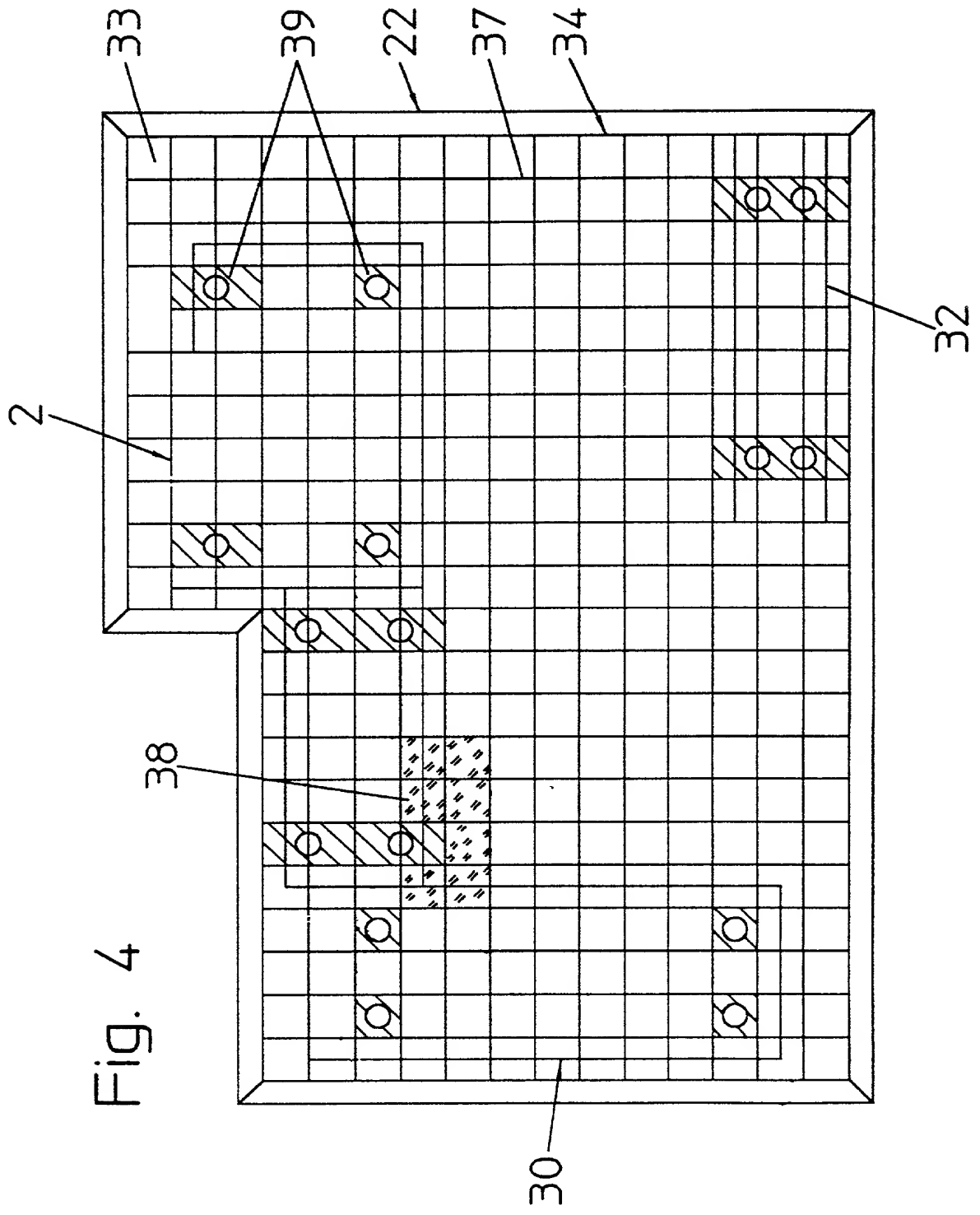
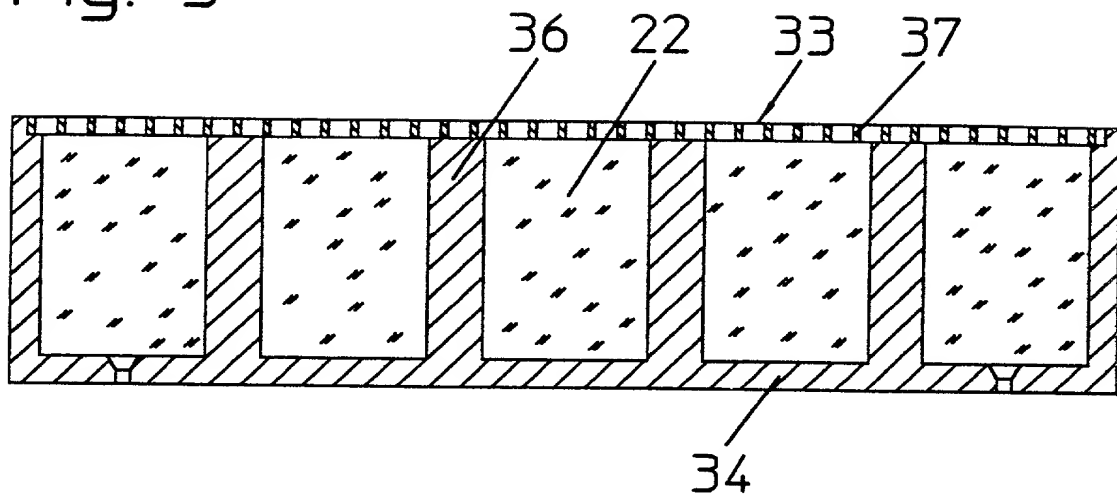
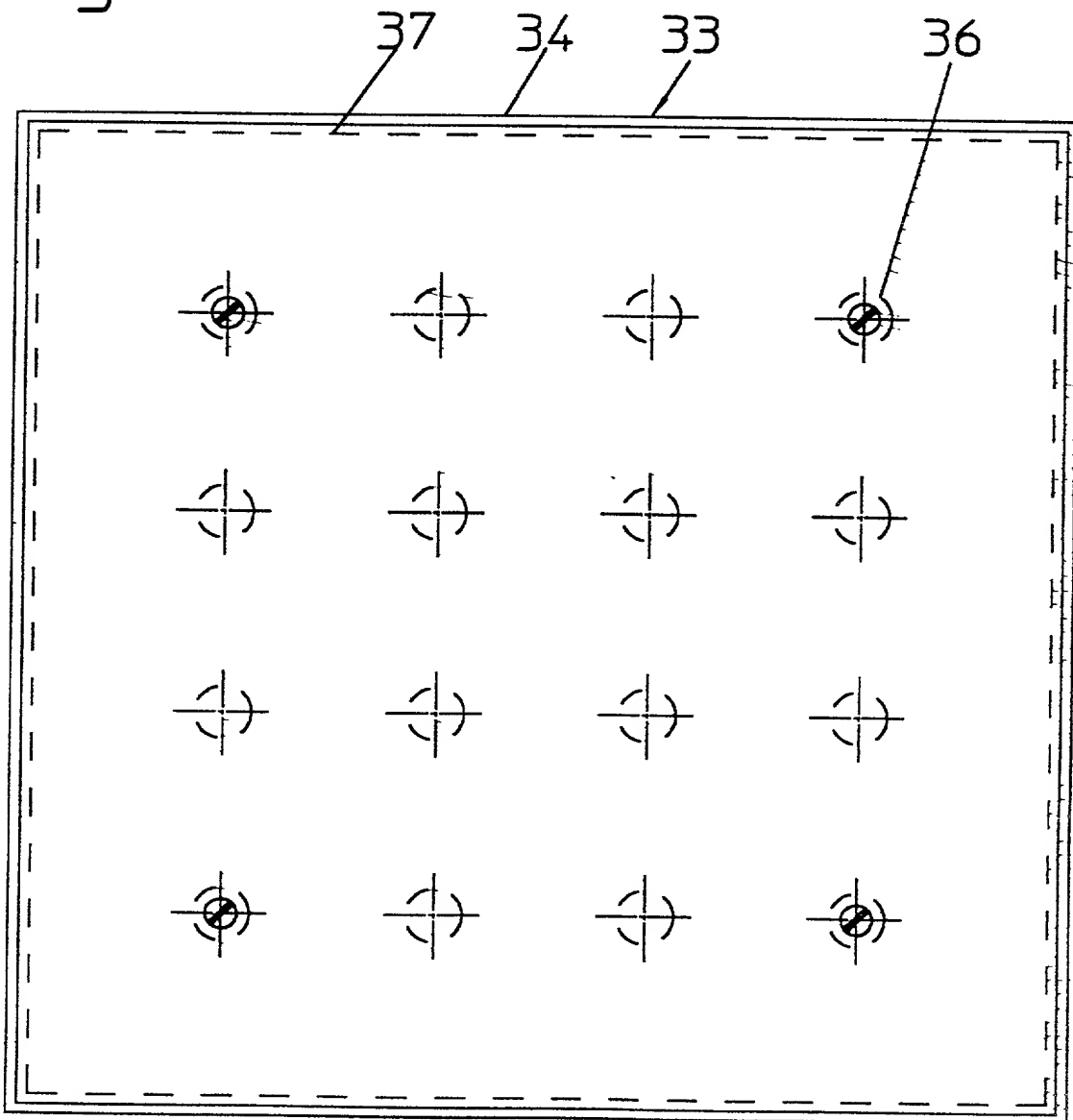


Fig. 4



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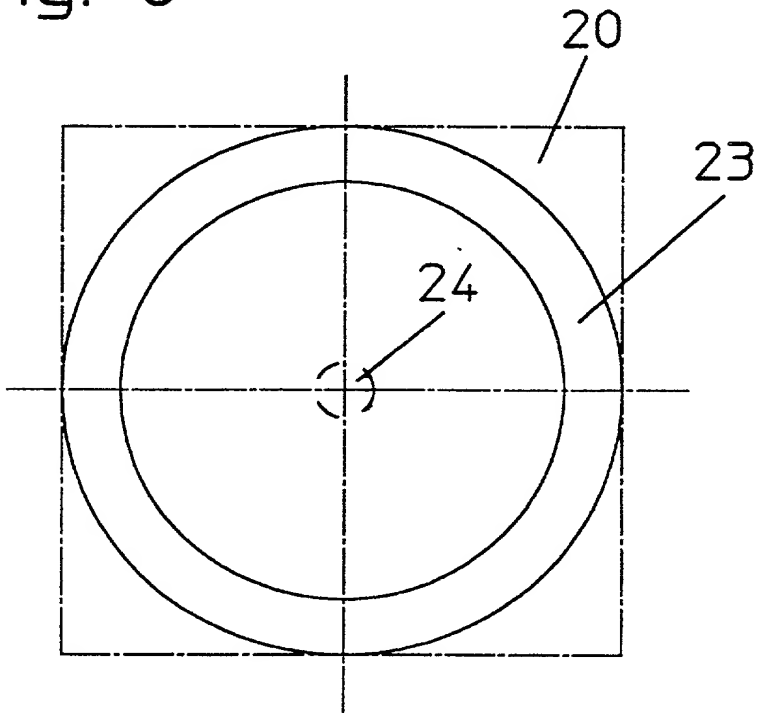
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Fig. 8

Fig. 10

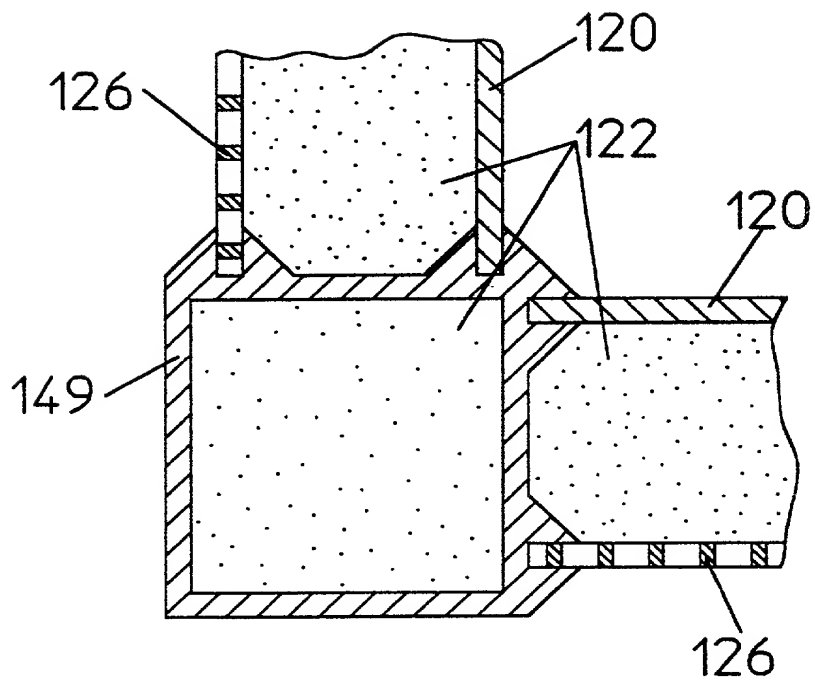


Fig. 9

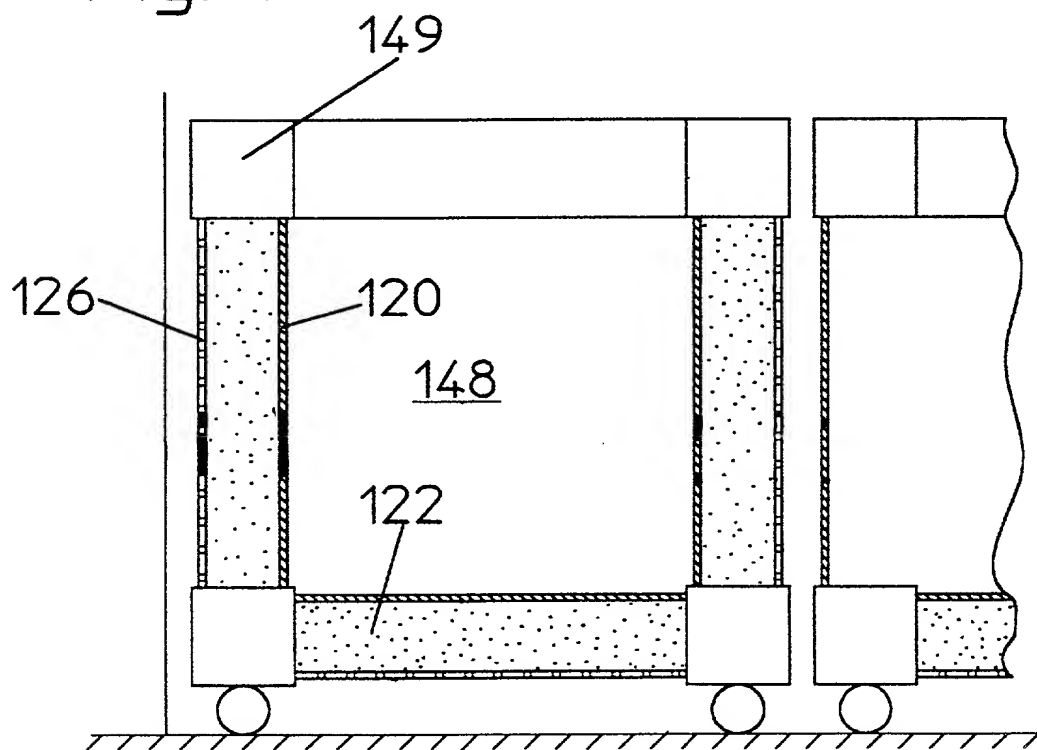




Fig. 11

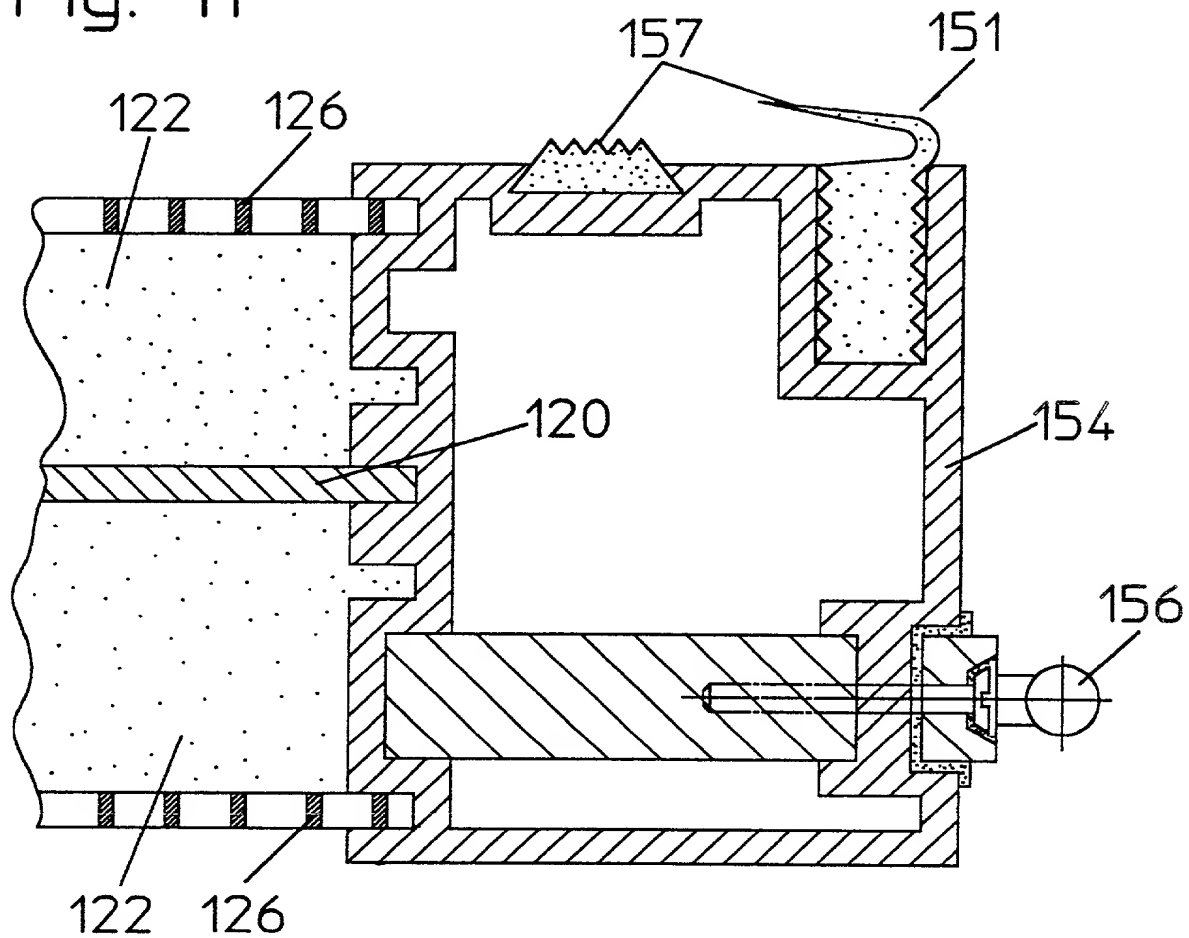


Fig. 12

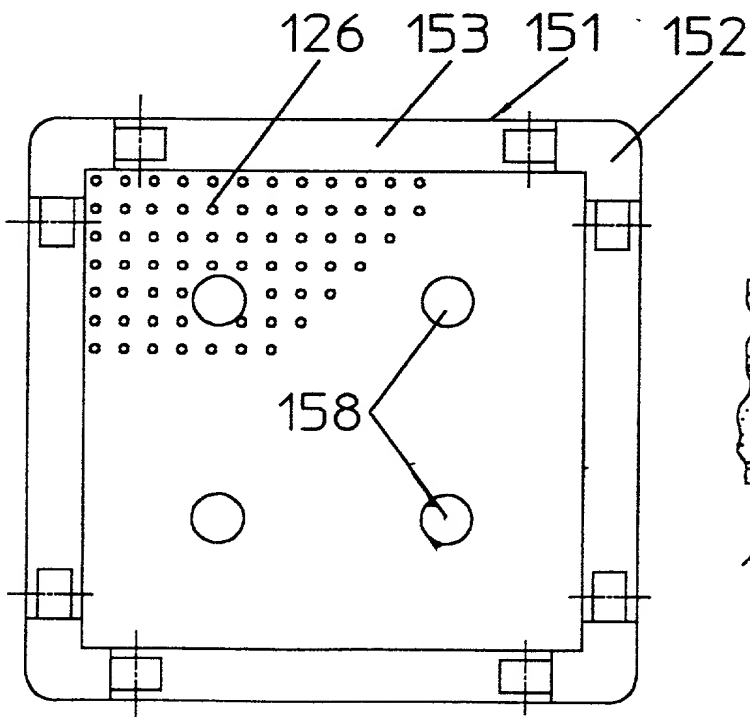


Fig. 13

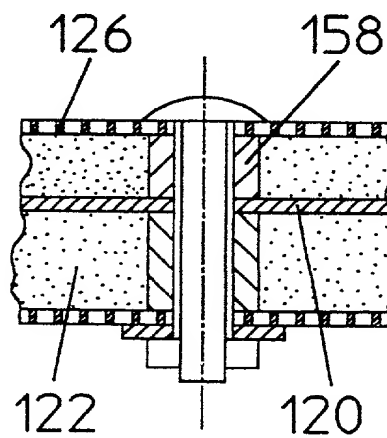


Fig. 14

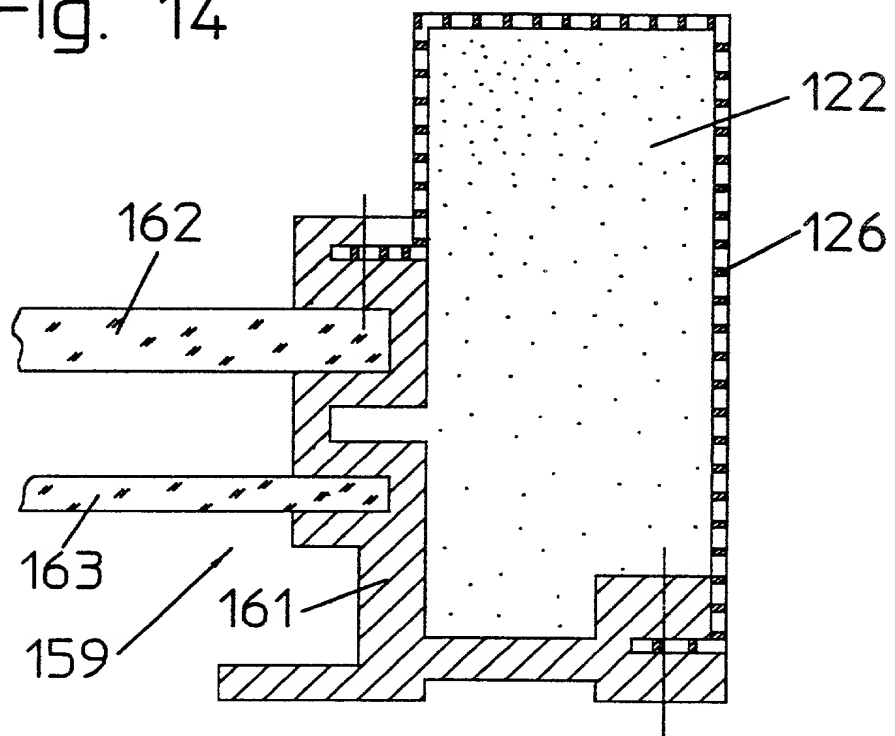


Fig. 17

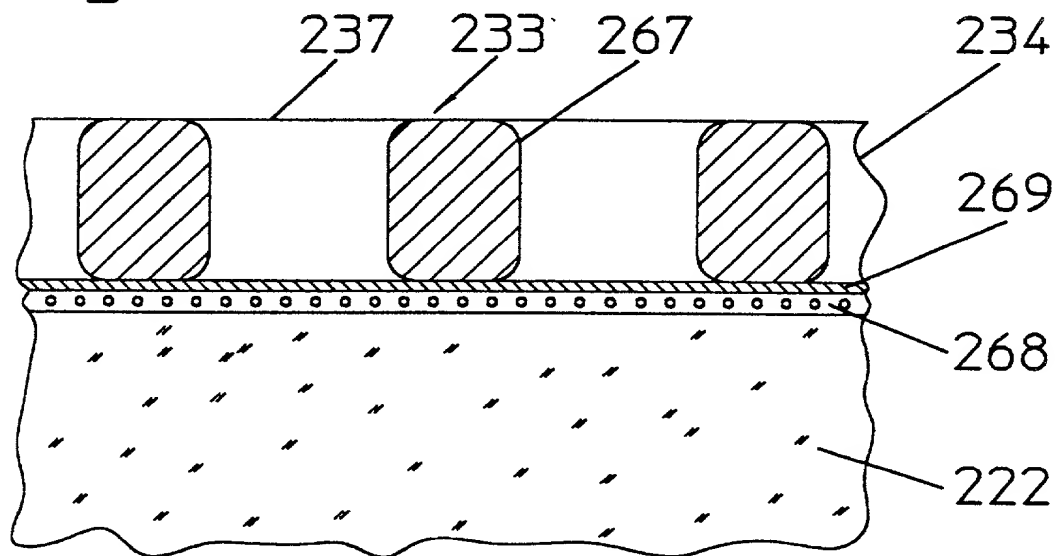


Fig. 15

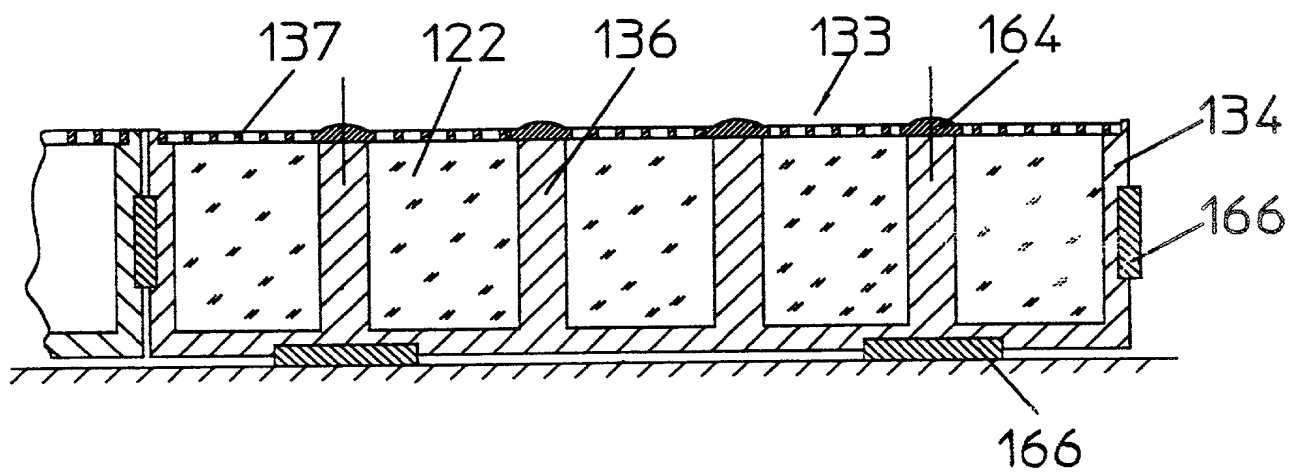
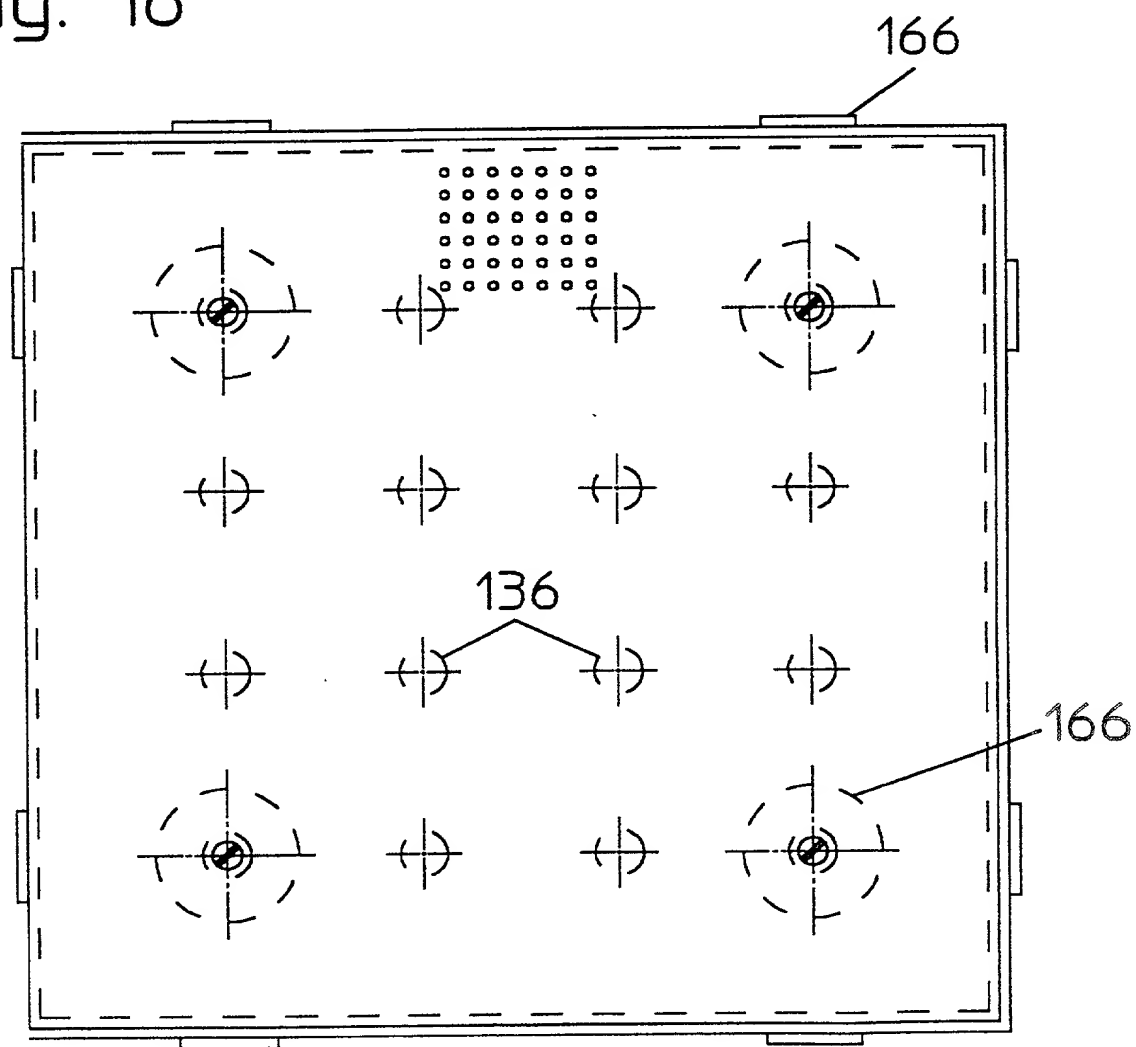


Fig. 16



DECLARATION FOR UNITED STATES PATENT APPLICATION,  
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

Attorney Docket  
**31653-165337 RK**

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **ARRANGEMENT FOR REDUCING THE NOISE LEVEL OF TOBACCO-PROCESSING PRODUCTION MACHINES** the specification of which

☒ is attached hereto.  
☐ as filed on \_\_\_\_\_ as Application No. \_\_\_\_\_ and was amended on \_\_\_\_\_ [if applicable].  
☐ as filed under the Patent Cooperation Treaty on \_\_\_\_\_, as Application No: \_\_\_\_\_, the United States of America being designated.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent, utility model, design or inventor's certificate listed below and have also identified below any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No
19943320.8	Germany	September 10, 1999	X	

I hereby appoint the following attorneys and agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: George H. Spencer (Reg. No. 18,038), Robert J. Frank (Reg. No. 19,112), Norman N. Kunitz (Reg. No. 20,586), Gabor J. Kelemen (Reg. No. 21,016), Marina V. Schneller (Reg. No. 26,032), Robert Kinberg (Reg. No. 26,924), Allen Wood (Reg. No. 28,134), Ashley J. Wells (Reg. No. 29,847), James R. Burdett (Reg. No. 31,594), Michael A. Gollin (Reg. No. 31,957), Catherine M. Voorhees (Reg. No. 33,074), G. Abe Zachariah (Reg. No. 38,366), Julie A. Petruzzelli (Reg. No. 40,769), Catherine A. Ferguson (Reg. No. 40,877), Michael A. Sartori (Reg. No. 41,289), Charles C. P. Rories (Reg. No. 43,381), Keith G. Haddaway (Reg. No. 46,180), Eric J. Weierstall (Reg. No. 46,331), Richard L. Aitken, (Reg. No. 18,791); Clifton E. McCann, (Reg. No. 29,565); John P. Shannon, (Reg. No. 29,276); Andrew C. Aitken, Registration (No. 36,729); Laurence J. Marhoefer, (Reg. No. 21,091), and Ralph P. Albrecht, (Reg. No. 43,466) Cameron H. Tousi (Reg. No. 43,197) all at Suite 1000, 1201 New York Avenue, N.W., Washington, D.C. 20005-3917, Telephone: (202) 962-4800, Telefax: (202) 962-8300. Address all correspondence to VENABLE, Post Office Box 34385, Washington, D.C. 20043-9998.

The undersigned hereby authorizes the U.S. attorneys named herein to accept and follow instructions from the undersigned's assignee, if any, and/or, if the undersigned is not a resident of the United States, the undersigned's domestic attorney, patent attorney or patent agent, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and the undersigned. In the event of a change in the person(s) from whom instructions may be taken, the U.S. attorneys named herein will be so notified by the undersigned.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature: Uwe Heitmann Date: 08/28, 2000.

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